

## NOTEWORTHY COLLECTION

## NEW MEXICO

*HEXALECTRIS COLEMANII* (Catling) A. H. Kenn. & L. E. Watson (ORCHIDACEAE).—Hidalgo Co., Coronado National Forest, Peloncillo Mountains, Skeleton Canyon 7.5' USGS quad, 12A 0685596mE, 3486984mN (NAD83), 31.5028°N, 109.0457°W (WGS84), 1620 m (5315 ft) elevation, Cottonwood Canyon, 390 m east of Arizona-New Mexico state boundary, 130 m east of Geronimo Trail, 31 May 2012, *M. A. Cloud-Hughes 027*, with *M. A. Baker* and *R. A. Coleman* (UNM126990). Single individual with five flowers (one flower collected) in sandy soil between boulders on eastern side of Cottonwood Canyon in duff under *Quercus grisea* Liebm./*Q. arizonica* Sarg. canopy with *Agave palmeri* Engelm., *Arctostaphylos pungens* Kunth, *Elymus elymoides* (Raf.) Swezey, *Ericameria laricifolia* (A. Gray) Shinners, *Juniperus deppeana* Steud., *Muhlenbergia emersleyi* Vasey, *Nolina microcarpa* S. Watson, *Q. emoryi* Torr., *Rhus glabra* L., and *R. trilobata* Nutt.

*Previous knowledge.* Formerly considered endemic to the mountains of southeastern Arizona, this species was originally collected by Toolin and Reichenbacher in 1981 in Baboquivari Canyon, Baboquivari Mountains, Pima Co., Arizona but was identified as *Hexalectris spicata* (Walter) Barnhart (ARIZ252881) (Southwestern Environmental Information Network [SEINet] 2013). In 1986, McLaughlin collected the species from McCleary Canyon, Santa Rita Mountains, Pima Co., Arizona, and these specimens were also initially identified as *H. spicata* (ARIZ271012) (SEINet 2013). In 1996, orchid specialist Ron Coleman photographed plants at McLaughlin's McCleary Canyon collection site and, along with Canadian orchid expert Paul Catling, identified the plants as *Hexalectris revoluta* Correll (Coleman 1999). Coleman located the species at additional sites in Pima Co., Arizona, and in 2004, Catling determined that these specimens were sufficiently different from other *Hexalectris revoluta* specimens to separate them as *Hexalectris revoluta* var. *colemanii* Catling (Catling 2004). This taxon was subsequently raised to species status, *Hexalectris colemanii*, after a phylogenetic analysis of the genus *Hexalectris* by Kennedy and Watson (2010).

*Hexalectris colemanii* has not been found in the Baboquivari Mountains since its original collection in 1981, in spite of repeated surveys by Coleman (Coleman 2002). Toolin and Reichenbacher found only 12 shoots of the species in 1981, and it is most likely this population has been extirpated by grazing. As part of a sensitive plant survey for the Coronado National Forest in 2003, Baker confirmed all earlier Santa Rita Mountains localities of *Hexalectris colemanii* and found an additional population further south in Sawmill Canyon (Baker 2003).

In 2010 through 2012, WestLand Resources, Inc. conducted surveys for *Hexalectris colemanii* as part of the permitting process for a proposed copper mine in the Santa Rita Mountains. These surveys resulted in the discovery of small populations of *Hexalectris colemanii* in four additional canyons within the Santa Rita Mountains, four canyons in the Big Dragoon Mountains, two canyons in the Whetstone Mountains, one

canyon in the Chiracahua Mountains, and one canyon in the Peloncillo Mountains (WestLand Resources, Inc. 2012). All of these recently discovered localities are in Arizona.

In 2012, Southwestern Botanical Research was contracted through the U.S. Fish and Wildlife Service and the Arizona Department of Agriculture to conduct surveys for *Hexalectris colemanii*. After conferring with WestLand to avoid duplication of effort with their large survey teams, we focused our surveys in the outlying Atascosa, Pajarito, Mule, northern Chiracahua, and Peloncillo Mountains. We found three shoots of *Hexalectris colemanii* in the Peloncillo Mountains of Arizona: two in Cottonwood Canyon, which were almost certainly from the same rhizome, and one in Miller Canyon. The final shoot of *Hexalectris colemanii* found on our survey was in Cottonwood Canyon approximately 400 m over the border in New Mexico.

*Significance.* This is the first record for *Hexalectris colemanii* in New Mexico. Because only one individual was found, *Hexalectris colemanii* can reasonably be considered the rarest orchid in New Mexico. Few *Hexalectris* species have been reported in the most recent floras of New Mexico (Martin and Hutchins 1980; Allred et al. 2012). A search of the SEINet herbarium specimen database shows one specimen (TEUI5647) collected approximately 25 km northwest of our specimen and identified as *Hexalectris* c.f. *revoluta* (SEINet 2013). The authors and Coleman have examined this specimen and are in agreement that, based on floral and fruit characters, it is *Hexalectris arizonica* (S. Watson) A. H. Kennedy & L. E. Watson.

Although the Coleman, WestLand Resources, Inc., and Southwestern Botanical Research surveys have significantly extended the known range of *Hexalectris colemanii*, this orchid should still be considered a very rare species. The largest number of individual shoots in any one population in a single year is approximately 140. Because this orchid is rhizotomous, the number of shoots likely represents a much smaller number of genetically distinct individuals. Furthermore, Coleman's monitoring efforts in McCleary Canyon have shown that the number of *Hexalectris colemanii* shoots in a population is extremely variable, with nearly every "good" year (e.g., 40–45 shoots in 2001) followed by a crash to zero or near zero the following year (WestLand Resources, Inc. 2012).

Major threats to *Hexalectris colemanii* include fire, grazing and trampling by livestock, mining, and threats to pollinator populations. As an obligate myco-heterotroph, *Hexalectris colemanii* is also vulnerable to any threat to its host plants, their ectomycorrhizae, or the litter layer. This orchid has so far been found only in "sky-island" habitats, which are inherently limited.

*Hexalectris colemanii* currently has no federal status, in spite of its limited range, very small known populations, and multiple threats. Efforts should continue to be made to protect known populations and locate new ones to ensure the long-term survival of this orchid.

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